



PATENT  
P56289

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

JONG-SEO CHOI et al.

Serial No.: 09/756,865 ✓

Examiner: WILLIAMS, JOSEPH L.

Filed: 10 January 2001

Art Unit: 2879

For: CATHODE MATERIAL INCLUDING RARE EARTH METAL USED AS  
ELECTRON EMISSION SOURCE FOR ELECTRON BEAM APPARATUS  
(as amended)

**REQUEST FOR CORRECTION OF PTOL-85 (Notice of Allowance)**

**Mail Stop: Issue Fee**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The attorney for the Applicant notes that the PTOL-85 (Notice of Allowance) mailed on 20 January 2004 for the above-referenced Application bears an error.

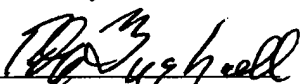
**Please correct the title to:**

**-- CATHODE MATERIAL INCLUDING RARE EARTH METAL USED AS  
ELECTRON EMISSION SOURCE FOR ELECTRON BEAM APPARATUS --**

**on PTOL-85, as shown in attached copies of pages 1 and 2 of an Amendment filed on 28 November 2003. Please note that the title was amended as above in the Amendment filed on 28 November 2003.**

Copies of pages 1 and 2 of an Amendment filed on 28 November 2003 and a copy of date-stamped postcard receipt of the Amendment filed on 28 November 2003 are attached.

Respectfully submitted,

  
Robert E. Bushnell  
Attorney for the Applicant  
Registration No.: 27,774

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Washington, D.C. 20005  
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Folio: P56289  
Date: 1/22/04  
I.D.: REB/sb

Enclosures:   1.   A copy of PTOL 85 mailed on 20 January 2004  
                  2.   Copies of pages 1 and 2 of an Amendment filed on 28 November 2003  
                  3.   A copy of date-stamped postcard receipt of the Amendment filed on 28 November 2003



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
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## NOTICE OF ALLOWANCE AND FEE(S) DUE

008439 7590 01/20/2004

ROBERT E. BUSHNELL  
1522 K STREET NW  
SUITE 300  
WASHINGTON, DC 20005-1202

EXAMINER

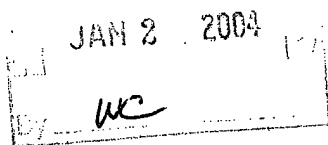
WILLIAMS, JOSEPH L

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 01/20/2004



APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/756,865	01/10/2001	Jong-Seo Choi	P56289	6204

TITLE OF INVENTION: CATHODE MATERIAL FOR ELECTRON BEAM APPARATUS

→ Please correct to -- CATHODE MATERIAL INCLUDING RARE EARTH METAL USED AS ELECTRON  
EMISSION SOURCE FOR ELECTRON BEAM APPARATUS --

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1330	\$300	\$1630	04/20/2004

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHT. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPO PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THE STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

## HOW TO REPLY TO THIS NOTICE:

## I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status is changed, pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above and notify the United States Patent and Trademark Office of the change in status, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.

☐ Applicant claims SMALL ENTITY status.  
See 37 CFR 1.27.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER:** Utility patents issued on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is the patentee's responsibility to ensure timely payment of maintenance fees when due.

# COPY

P56289

28 November 2003

Applicant: JONG-SEO CHOI et al.  
Serial No.: 09/756,865  
Filed: 10 January 2001  
For: *CATHODE MATERIAL INCLUDING RARE EARTH METAL  
USED AS ELECTRON EMISSION SOURCE FOR ELECTRON  
BEAM APPARATUS* (as amended)

Document filed:

1. Amendment (responsive to Paper No. 09062003 dated 16 September 2003)





PATENT  
P56289

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

JONG-SEO CHOI et al.

COPY

Serial No.: 09/756,865

Examiner: WILLIAMS, JOSEPH L.

Filed: 10 January 2001

Art Unit: 2879

For: CATHODE MATERIAL INCLUDING RARE EARTH METAL USED AS  
ELECTRON EMISSION SOURCE FOR ELECTRON BEAM APPARATUS  
(as amended)

**AMENDMENT UNDER 37 C.F.R. §1.111**

**Mail Stop: Non-Fee Amendment**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In response to the first Office action (Paper No. 09062003) dated 16 September 2003, the applicant respectfully requests re-examination, reconsideration, and entry of the following remarks and amendments.

Folio: P56289  
Date: 11/28/03  
I.D.: REB/SS/sb

## AMENDMENTS TO THE SPECIFICATION

Please amend the title, as follows:

### CATHODE MATERIAL INCLUDING RARE EARTH METAL USED AS ELECTRON EMISSION SOURCE FOR ELECTRON BEAM APPARATUS

Please amend paragraphs [0006] through [0008], [0011], [0023] and [0024], as follows:

[0006] For instance, a metal cathode based on ~~lanthanum~~ lanthanum hexaboride ( $\text{LaB}_6$ ) is known to have a higher degree of strength and electron emission power compared to oxide cathodes, and a single crystal cathode can emit a higher electron current density on the order of  $10 \text{ A/cm}^2$ . However, the ~~lanthanum~~ lanthanum hexaboride cathode has a short lifetime, and thus it has been used only partially in a vacuum electronic apparatus whose cathode unit can be replaced. The reason that the ~~lanthanum~~ lanthanum hexaboride cathode has a short lifetime is due to high reactivity with the components of a heater, and to the fact that ~~lanthanum~~ lanthanum hexaboride is in contact with the components of the heater, e.g. tungsten, to form fragile compounds.